DURHAM
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CITY OF MEDICINE

The City of Durham, North Carolina

Annual Sanitary Sewer System Report
FY 2001 - 2002

This is the third annual report that the City is providing to sewer customers to meet the requirements of House Bill 1160. In October of 1999, the General Assembly of the State of North Carolina passed the bill requiring the owners and/or operators of wastewater collection and treatment systems to provide an annual report to users or customers. Each year's report must summarize the treatment works' and/or collection system's performance over a twelve-month period. In addition to making the report available to all customers, the City also submits the summary to the North Carolina Department of Environment and Natural Resources.

Under the current City organization, responsibilities for wastewater collection and treatment fall under two City departments. The Water and Sewer Maintenance Division of the Public Works Department maintains the collection system, which is the series of pipes that transports wastewater to the treatment facilities. Wastewater includes all *used* domestic and process water from any drain leaving a residence, business, industry or other facility and entering the collection system. The collection system is sometimes referred to as the sanitary sewer system. The water reclamation facilities, also known as wastewater treatment facilities, are operated and maintained by Wastewater Division staff of the Environmental Resources Department.

Durham's Sewer System Facilities

	Collection System	***Water Reclamation Facilities***	
Name of Facility	Public Works Operations Center	North Durham Water Reclamation Facility	South Durham Water Reclamation Facility
Permit number	n/a	NCOO23841	NCOO47597
Address	3464 Third Fork Dr.	1900 E. Club Blvd.	6605 Farrington Rd.
Operator in Charge	Vernon W. Reese	William W. Telford	Robert D. Dodson
Phone number	919-560-4344	919-560-4384	919-560-4336

Wastewater travels underground through sewer system pipes to the treatment plant. At the plant, wastewater is treated by physical, biological and chemical processes before it is released back into the environment. The health of downstream users, both human and wildlife, depends on collection and treatment plant staff to ensure that Durham's wastewater is processed to a level that can be returned to the environment with NO adverse impacts. In many cases, water downstream of a water reclamation facility is cleaner than the water upstream of the facility - as a result of the high level of treatment.

In this report we have included a description of the collection system operation, the wastewater treatment process and the City's grease reduction initiative. As with any large municipal system, occasional

stoppages cause backups and overflows. Included in this report is a table listing the spills and overflows that occurred this year and the steps taken to remediate the impact and prevent reoccurrences. ALL incidents were previously reported to the state and public within 48 hours of their occurrence.

The Annual Sanitary Sewer System Report is available at City Hall, Public Libraries, Environmental Resources and Public Works facilities and on the City's website: **www.ci.durham.nc.us**. Additional copies of the report may be requested by calling either Environmental Resources at 919-560-4381 or Public Works at 919-560-4326.

Down the Drain! Where does it go?

The City maintains over 1103 miles of underground pipes that carry wastewater away from homes, businesses, schools, hospitals and industries. This includes approximately 35 miles of sewer lines in the Parkwood area that were recently turned over to the City for maintenance. The waste flows by gravity to lift stations located in strategic areas throughout the service area. Pumps in the "lift" stations do just that – they lift the wastewater to a higher elevation where it again flows by gravity, ultimately to one of the City's two water reclamation facilities. Pump stations for the collection system are monitored and maintained by Environmental Resources' Plant Engineering and Maintenance division staff.

Wastewater flows either north or south, based on the location of a business, home or facility along the ridgeline. The ridgeline runs along Pettigrew Street and the railroad lines. South of Pettigrew, waste flows to the South Durham Water Reclamation Facility, located at 6605 Farrington Road. To the north of the ridgeline, waste flows to the North Durham Water Reclamation Facility at 1900 East Club Boulevard. Durham County owns and operates a third wastewater treatment plant that serves most of Research Triangle Park, Parkwood and a few other south Durham neighborhoods.

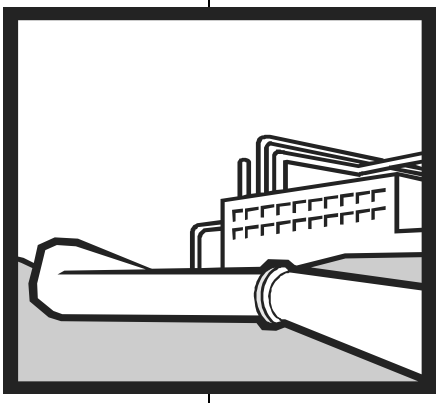
Collection System Performance

From July 1, 2001 through June 30, 2002, Water and Sewer Maintenance crews "rodded out" 175,000 feet of sewer main/service lines, flushed 515,000 feet of sewer main/service lines, inspected 129,000 feet of sewer main/service lines with closed circuit TV (television) equipment, inspected 6,000 manholes, repaired/replaced 138 sewer services and responded to 735 blockages. Sixty percent of the blockages in the sewer system are caused by inappropriate disposal of grease. Many of the responses to sewer overflows are also repeat calls, due to build-up of grease in the lines, similar to plaque buildup in the human arteries. Although City staff had to address 10 more overflows this year than last, the combined volume of all the overflows was only ten percent of last year's combined volume.

This is partially attributable to the major grease reduction campaign initiated last year to alleviate the environmental and financial impacts of this problem. One major element of the program has been an extensive cleaning of problem areas of the system. In Fiscal Year (FY) '00-'01, the Public Works department spent $100,000 on contract remediation of these areas of the system. Remediation consisted of using a high-pressure jet wash to remove the grease from the interior of the main trunk line pipes. Sand traps were installed at manholes below the area

to contain the grease. The grease was then vacuumed out of the system and hauled from the site.

This activity has resulted in a two percent decrease in the total number of blockages that Public Works crews responded to in FY '01-'02. The City has also experienced an 11 percent reduction in blockages per system mile over the last five years. Not only does this program reduce costs to the City's Risk Management fund, but it has also reduced costs related to manpower and equipment usage. This also allows more efficient crew deployment to address routine system maintenance needs.



The second major element of the program is the education, prevention and enforcement effort coordinated by the Environmental Resources Department's Industrial Pretreatment Program (see next page).

The second most common cause of sewer blockages is tree roots. Water and Sewer Maintenance crews "cut" out these roots where identified and use special root inhibiting chemicals to prevent further root intrusion.

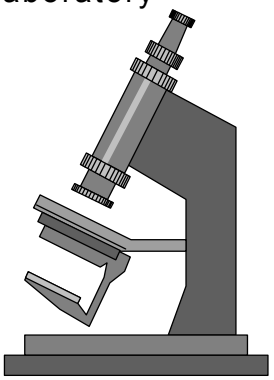
Water Reclamation Facility Plant Performance (a.k.a wastewater treatment plants)

The City's two treatment facilities have the combined capacity to treat (or reclaim) 40 million gallons per day (MGD) of wastewater. During this report period, the average daily flow treated by the two plants was 17.3 MGD. Flows into both plants were much lower due to the extreme drought encompassing the Piedmont and most of the Southeast.

During FY '01-'02, the South Durham Water Reclamation Facility operated without any violations. One weekly violation of the fecal coliform limit occurred at the North Durham Water Reclamation Facility in January of 2002. Fecal coliforms are bacteria found in the intestines of warm-blooded animals and serve as indicators of the presence of animal/human feces. The facility's permit limit is 400 colonies per 100 milliliters (ml). The effluent from the North Durham plant was measured at 911 colonies per 100 ml. The violation was caused by a malfunction in the ultra-violet disinfection system, which was repaired. There was no violation of the monthly fecal coliform limit. All samples collected and analyzed after the event demonstrated continuing compliance with the permit limit. There was no environmental impact as a result of this violation.

Analytical Support

Most laboratory analyses are performed at the City's state-certified laboratory located at the South Durham Water Reclamation Facility site. The lab staff conducts approximately 18,000 analyses per year to ensure compliance with permit limits and for process control purposes. In addition to providing lab support for the reclamation facilities, the laboratory provides analytical support for the Water Supply and Treatment Division, the City's Storm Water Program and the City's Industrial Pretreatment Program. While the Storm Water group is charged with eliminating illegal discharges into the storm sewers, the Industrial Pretreatment Program manages industrial and non-residential



Analytical Support cont'd . . .
discharges into the City's sanitary sewer system.

Industrial Pretreatment Program staff survey facilities discharging into the sewer system and issue permits to those falling into certain categories, determined either by the type of business activity they conduct or the type(s) of waste discharged from their facility. Permit limits are established based on the ability of the receiving treatment plant – either the North Durham Water Reclamation Facility or the South Durham Water Reclamation Facility – to assimilate, treat and remove substances from the waste.

The City is committed to protecting the environment by providing highly efficient and cost-effective wastewater collection and treatment services for the Durham community.

The Skinny on Fat Free Sewers

To help in the effort to reduce grease blockages in the sewer system, the Industrial Pretreatment Program staff coordinates the education and inspection portion of the grease reduction initiative. Grease enters the sewer system from both household drains as well as poorly maintained grease traps in restaurants and other food service establishments. To meet the 250 mg/L limit for FOG (food, oil and grease), food preparation/processing facilities must clean their removal systems (grease traps) on a monthly basis. More frequent cleaning will be required if a facility discharges more than 250 mg/L of FOG. Less frequent cleaning may be permitted if the facility can demonstrate that the 250 mg/L limit can be met with an alternate cleaning schedule. Cleaning and removal records are required to be maintained on-site for three years and available for inspection on request.

Residential customers are also asked to help reduce grease in the system. Tips include:

- Placing grease and used oil in collection containers for proper disposal. The City now has a collection container for used cooking oil at the Waste Disposal and Recycling Center on E. Club Blvd.
- Composting or disposing of food scraps in the trash can - don't use garbage disposal,
- Wiping grease off surfaces with absorbent toweling before wash down,
- Removing grease from kitchen utensils with scrapers or paper towels before washing them,
- Sharing grease reduction tips and information with your neighbors. The City's Neighborhood Environmental Action Team (NEAT) Program has a grease reduction/education component. Check out the NEAT page on the City's website to find out how you and your neighbors can participate.

For more information, call to 560-4381 and request a copy of the *Fat Free Sewers* brochure.